

BIOPHOTONICS

BRINGING LIGHT TO THE LIFE SCIENCES®

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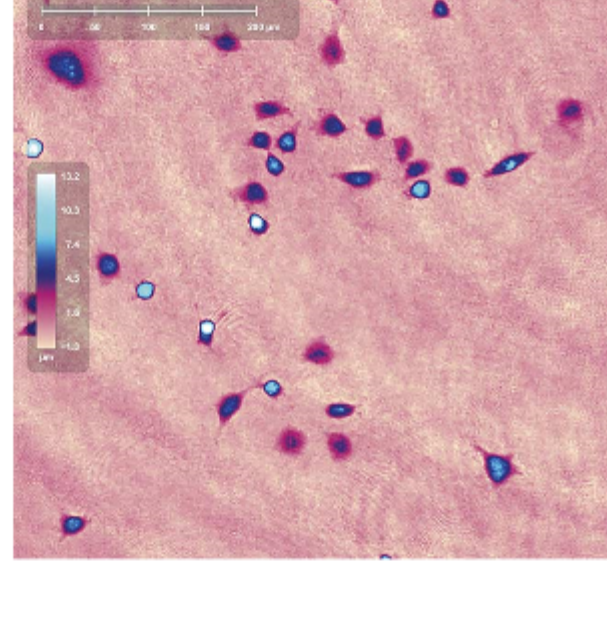
Monthly newsletter focusing on how light-based technologies are being used in the life sciences. Includes news, features and product developments in lasers, imaging, optics, spectroscopy, microscopy, lighting and more. Manage your Photonics Media membership at [Photonics.com/subscribe](https://www.photonics.com/subscribe).



Quantitative Phase Imaging Advances Regenerative Medicine

Regenerative medicine is defined as the process of replacing, engineering, or regenerating human or animal cells, tissues, or organs to restore or establish their normal function. Researchers have developed techniques and devised innovative treatments using methods that are suited for small-scale cell production in standard laboratories. For example, in an ongoing Swedish-British study, eight patients with Parkinson's disease will receive stem cell treatment. However, before any cell treatments can become available to the general population, production must be scaled up, streamlined, and safe. To scale up the process, larger batches of cells must be produced, and the batches must be standardized and monitored to invariably deliver the expected outcome safely. A nondestructive technology such as quantitative phase imaging is capable of meeting this need.

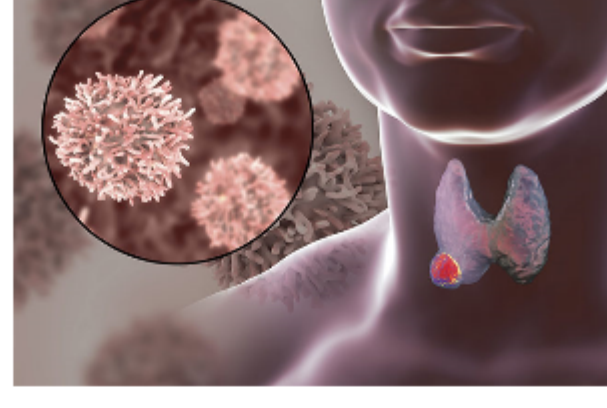
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Fluorescence Polarization Approach Allows Quantitative Cancer Diagnosis

Fluorescence polarization (Fpol) is an optical phenomenon that characterizes the polarization of fluorescence emissions relative to the polarization state of the excitation light. It is sensitive to factors that influence the rotational motion of the fluorophores during the lifetime of the excited state, for example, binding and viscosity. The binding of fluorophores to larger macromolecules reduces rotational mobility and preserves high Fpol. Similarly, high Fpol values will be exhibited by fluorophores in a viscous environment that restricts rotational movement.

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Cell Manipulation Technique Enters into Commercial Market

A laser technology developed at the Max Planck Institute of Molecular Cell Biology and Genetics makes it possible to influence and specifically control movements within living cells and embryos. The technology, called Focused Light-Induced Cytoplasmic Streaming (FLUCS), can be used to help better understand embryonic developmental disorders. The technology has been licensed by Rapp OptoElectronic, a photomanipulation and illumination systems developer.

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:: Featured Products & Services



ODiate™ Optical Filters

MKS/Newport

ODiate™ high-performance optical filter coatings are manufactured on our next-generation thin-film coating platform and are designed to deliver a high level of precision, productivity, and consistency of spectral performance. Discover how ODiate optical filters can enable high signal to noise system performance, low crosstalk between channels, and repeatable spectral feature placement for your sophisticated optical systems.

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OEM Microscopy Components

Evident Scientific Inc.

Olympus Scientific Solutions is now Evident, but our commitment to manufacturing high-quality microscopy components and optics is unchanged. Evident OEM components seamlessly integrate into large systems to provide the exceptional optical quality you need to deliver a high-quality final product.

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Single-Objective Light Sheet

Applied Scientific Instrumentation Inc.

Based on the OPM and SCAPE technologies and developed in collaboration with Leica Microsystems, microscope enables fast and gentle volumetric imaging of fluorescent biological samples over many time points and multiple channels, all while using conventional sample mounting.

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LS850 Fully Automated Microscope

Etaluma Inc.

The LS850 Microscope is the latest generation of our fully automated three-channel flagship model and offers the latest advances in optics, cameras, throughput, and user flexibility delivering image quality, motion speed, illumination, and software flexibility.

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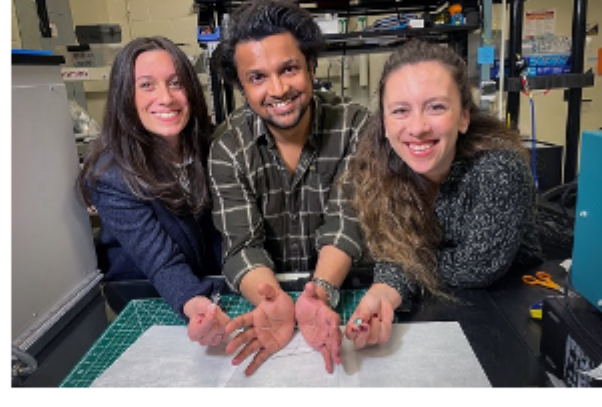


:: In Case You Missed It

Optogenetics Shows Relationship Between Brain and Gut Health

The brain-gut connection is known to influence hunger and mood, and it has also been associated with neurological and other disorders. To explore the signaling that occurs between these two organs, scientists at MIT integrated light sources, thermal sensors, microelectronics, and microfluidics in a device that enables stable bioelectronic interfaces with the brain and gastrointestinal tract in mice.

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In-Ear Wearable Measures Blood Flow to the Head

Digital health company STAT Health has unveiled a 24/7 in-ear wearable that uses optical sensors to measure blood flow to the head to better understand symptoms such as dizziness, brain fog, headache, fainting, and fatigue that occur upon standing. All are common symptoms for illnesses such as long COVID.

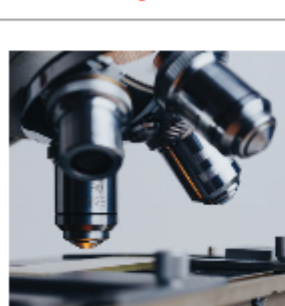
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Video Tech Enables Imaging Through Scattering Media

Researchers from Rice University and University of Maryland have created full-motion video technology that could enable cameras to peer through fog, smoke, driving rain, murky water, skin, bone, and other media that reflect scattered light and obscure objects from view.

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:: Upcoming Webinars



Nanoscale Imaging Techniques

Wed, Aug 2, 2023 1:00 PM - 2:00 PM EDT

Golshan Coleiny of Fundamental Optical Solutions shares a brief history of nanoscale imaging with a focus on optical technologies, addressing many of today's challenges in optical limitation imaging and other applicable technologies. She discusses techniques that utilize optical nanomicroscopy for higher resolutions and their advantages and limitations in comparison to non-optical nanomicroscopy. Finally, this presentation shares a road map for further development of advanced tools in nanotechnology.

[Register Now](#)

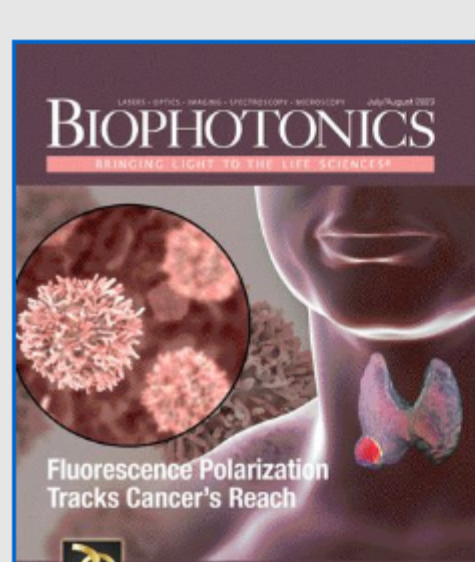
:: Next Issue:

Features

OCT System Design, Fiber Optic Probes, Fluorescent Microscopy, Optoacoustic Microscopy

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